

CLAIMS

1. A control system for a wind power plant, comprising:

sensor means for sensing measurement values to be used for direct or indirect quantification of the current loading or stress, or both, of the turbine occurring depending on the local and meteorological conditions, and

downstream of said sensor means, an electronic signal processing system operative to the effect that the power reduction required in the optimized condition of the wind power plant will be restricted to obtain optimum economical efficiency under the current operating conditions, both in cases of wind in the range of the nominal wind velocity and in cases of high wind velocities.

2. The control system according to claim 1 wherein the wind power plant is designed for blade adjustment in the direction of the feathered pitch (pitch-type plant).
3. The control system according to claim 1 wherein the wind power plant is a stall or active stall plant.
4. The control system according to claim 1 wherein the wind power plant is designed for variable-speed operation or for at least two fixed operating speeds.
5. The control system according to claim 1 wherein the measurement values monitored by said sensor means include one or a plurality of the values of the operating data from the group including the rotor speed, the generator speed, the electric power, the generator rotational moment, the

blade angle, the blade angle adjustment rate, the wind velocity and the wind direction.

6. The control system according to claim 1 wherein the measurement values monitored by said sensor means include accelerations in the rotor blades and/or the nacelle and/or the tower.
7. The control system according to claim 1 wherein the measurement values monitored by said sensor means include stretching on representative points of the components (e.g. the blade roots, rotor shaft, the nacelle base, the base of the tower) or deformations in elastic bearings.
8. The control system according to claim 1 wherein the measurement values monitored by said sensor means include data of the wind field in or before the rotor plane.
9. The control system according to claim 1 wherein the measurement values monitored by said sensor means include measurement data from other wind power plants supplied via a network.
10. The control system according to claim 1 wherein, using a signal processing system, the measurement values monitored by said sensor means are processed into actual spectra (online rainflow counting) or actual distribution functions.
11. The control system according to claim 1 wherein, using a signal processing system, damages of the components are computed from the actual spectra.
12. The control system according to claim 1 wherein, using a signal processing system, desired spectra or desired distribution functions are computed from externally supplied data on the economy of the turbine.

13. The control system according to claim 1 wherein, using a signal processing system, current energy generating costs (online Cost Of Energy COE) are computed from the evaluated externally supplied data.